

WHAT IS CLAIMED IS:

1. A semiconductor device comprising:

a first transistor having a gate insulating film of a first thickness, at least one of source/drain of said first transistor being formed of a first lightly doped region and a first heavily doped region; and

a second transistor having a gate insulating film of a second thickness smaller than said first thickness, at least one of source/drain of said second transistor including a second lightly doped region and a second heavily doped region higher in concentration than said first heavily doped region.

2. The semiconductor device according to claim 1, wherein

at least one of the source/drain of said second transistor has a medium-doped region having a concentration higher than said second lightly doped region and lower than said second heavily doped region.

3. The semiconductor device according to claim 1, wherein

said semiconductor device includes a memory cell portion for storing data and a peripheral circuit portion

5 for external input/output,
said memory cell portion includes said first transistor,
and
said peripheral circuit portion includes said second
transistor.

4. The semiconductor device according to claim 2,
wherein
a diffusion depth of said second heavily doped region
is smaller than a diffusion depth of said medium-doped
5 region.

5. The semiconductor device according to claim 1,
wherein
a field insulating film is formed in contact with said
first heavily doped region,

5 said first and second transistors are covered with an
interlayer insulating film having a contact hole reaching
said first heavily doped region and said field insulating
film, and

a concavity is formed at said field insulating film
10 located immediately under said contact hole, and

a storage node is formed in said concavity and on said
first heavily doped region.

6. A semiconductor device comprising:

a semiconductor substrate having a main surface;

a first impurity region for threshold voltage control
having a peak concentration at a position of a first depth
from said main surface;

a second impurity region for threshold voltage control
spaced from said first impurity region, and having a peak
concentration at a position of a second depth larger than
said first depth;

a first transistor formed on said first impurity region,
and having a gate insulating film of a first thickness; and

a second transistor formed on said second impurity
region, and having a gate insulating film of a second
thickness smaller than said first thickness;

7. The semiconductor device according to claim 6,
wherein

a third impurity region lower in concentration than
said first impurity region is formed under said first
impurity region,

said first transistor has a pair of first source/drain,
at least one of said first source/drain reaches said
third impurity region,

said second transistor has a pair of second
source/drain, and

said second source/drain have diffusion depths smaller than said second depth.

8. A semiconductor device comprising:

a first transistor having a gate insulating film of a first thickness, and having first and second impurity regions having relatively large first diffusion depth and relatively small second diffusion depth and forming source/drain, respectively, and;

a second transistor having a gate insulating film of a second thickness smaller than said first thickness, and having third and fourth diffusion regions having diffusion depths smaller than said first diffusion depth and not smaller than said second diffusion depth, and forming source/drain, respectively.

9. The semiconductor device according to claim 8, wherein

a concentration of said first impurity region having said first diffusion depth is higher than a concentration of said second impurity region, and a field insulating film is formed in contact with said first impurity region.

10. A semiconductor device comprising:

a first transistor formed on a main surface of a

semiconductor substrate, and having first source/drain;

5 a second transistor formed on said main surface with a
space from said first transistor, and having second
source/drain;

an interlayer insulating film covering said first and
second transistors, and having a contact hole reaching one
of said first source/drain;

10 a plug electrode formed in said contact hole;

first metal silicide formed on surfaces of said second
source/drain; and

a bit line formed on said plug electrode with a second
metal silicide therebetween.